

## **Appendix A. Surface Sediment Grab Logbook**

**SURFACE SEDIMENT GRAB  
COLLECTION ~~AND SAMPLE~~  
~~CONTAINER~~ LOGBOOK**

**2014 Bellingham Bay  
Regional Background Sediment Characterization**

**September 2014**

 **NewFields**

9.9.14

8:30 Depart Marina  
transit to station 15

Crew  
Nautilus  
Tom Hummermeister  
Will Hedner  
Jasper Boas  
Bio-Marine  
Enterprise Charlie Eaton  
Tom Putman

9.10

9:00 Depart Marina

Crew  
same as above  
+ Hugo Froylund  
(Ecology)

9.11

8:15 Depart Marina

Crew same as  
9/9  
+ Susannah Edwards  
(Ecology)

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB-15

**Location:** Bellingham Bay

**Date/Time:** 9.9.14 / 915

**Crew:** TH, WH, JB, CE, TP

Grab #	Bottom Depth	Penetration Depth	Time
1	23 m	2000	855
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i> over penetrated  rejected  - removed weights
Cobble Gravel Sand C M F <u>Silt / Clay</u> Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray <u>Black</u> Other:	None Slight <u>Moderate</u> Strong Overwhelming <u>H<sub>2</sub>S</u> Petroleum	
2	23 d	17cm	915
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i> soft mud wet sieve 96 ml 3 ml solids 92% fines
Cobble Gravel Sand C M F <u>Silt / Clay</u> Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray <u>Black</u> Other:	None Slight <u>Moderate</u> Strong Overwhelming H <sub>2</sub> S Petroleum	
1	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
1	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-08

**Location:** Bellingham Bay **Date/Time:** 9.9.14

**Crew:** TH WH JB, C E TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 16.8m	<b>Penetration Depth</b> 17	<b>Time</b> 933
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	wet sieve 40 ml 3 ml ret.  92% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-22

**Location:** Bham Bay **Date/Time:** 9.9.14 1026

**Crew:** IH, WH, JB, CE, TP

Grab #	Bottom Depth	Penetration Depth	Time
1	10.7m	9cm	952
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	underpenetrated - rejected
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
2	10.8	9cm	1000
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	underpenetration - rejected - added sm weights
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
3	10.5	10cm	1016
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	underpenetration - rejected
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
4	10.4	12cm	1026
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	water 40ml 7ml ref 83% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-18

**Location:** B' Linn Bay

**Date/Time:** 9.9.14

**Crew:** TH, WH, JB, CE, TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 9.9	<b>Penetration Depth</b> 17	<b>Time</b> 1042
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i> w/ sieve 40ml 4ml return  90% fines
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-28

**Location:** B'ham Bay

**Date/Time:** 9.9.14

**Crew:** TH, WH, CE, JB, TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 5.4	<b>Penetration Depth</b> 13 cm	<b>Time</b> 1129
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	Wet sieve 40 ml 16 ml retained  60% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	



# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-10

**Location:** B'ham Bay

**Date/Time:** 9.9.14 / 1147

**Crew:** TH, WH, JB, CE, TP

Grab #	Bottom Depth	Penetration Depth	Time
1	14.5	14cm	1147
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	Wet silt 40ml 2ml retained 95% fines
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB-19

**Location:** B'ham Bay

**Date/Time:** 9.9.14

**Crew:** JH, WH, JB, CE, PM

Grab #	Bottom Depth	Penetration Depth	Time
1	3.0	—	1311
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	empty grab 2x4 caught in grab jaws
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
2.	2.5	—	1315
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	empty - too close to shore + shallow called Lucy to confirm it was OK
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
3	9.5	13cm	1326
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	polychaetes wet sieve 40 ml / 7 ml 78% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

No more to the SW about 85m

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-24

**Location:** Bham Bay

**Date/Time:** 9.9.14

**Crew:** TH, WH, JB, CE, TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 16.9	<b>Penetration Depth</b> 17	<b>Time</b> 1353
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	wet sieve: 40-1 95% fines 2-1 polychaetes
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization      **Station:** BB-13

**Location:** B'ham Bay      **Date/Time:** 9.9.14

**Crew:** TH, WH, JB, CE, TP

<b>Grab #</b> <u>1</u>	<b>Bottom Depth</b> <u>20.0</u>	<b>Penetration Depth</b> <u>Over</u>	<b>Time</b> <u>1413</u>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	<u>Over penetrated rejected</u>
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b> <u>2</u>	<b>Bottom Depth</b> <u>20.5</u>	<b>Penetration Depth</b> <u>17cm</u>	<b>Time</b> <u>1423</u>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	<u>Drab olive</u>	<u>None</u>	<u>wet sieve 40 ml 2 ml 95% fines</u>
Gravel	Brown	Slight	
<u>Sand C M F</u>	Brown surface	Moderate	
<u>Silt / Clay</u>	Gray	Strong	
Organic matter	<u>Black</u>	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB-21

**Location:** B'ham Bay

**Date/Time:** 9.9.14

**Crew:** TH, WH, JB, CE, TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 18	<b>Penetration Depth</b> 17	<b>Time</b> 1453
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	palychmudos wet sieve: 40ml 2ml 95% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-30

**Location:** B'ham Bay

**Date/Time:** 9.9.14

**Crew:** TH, WH, JB, CE, TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 15.8	<b>Penetration Depth</b> 17cm	<b>Time</b> 1507
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	wet sieve 40um 2nd 95% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB-17

**Location:** B'ham Bay

**Date/Time:** 7.9.14

**Crew:** TH, WH, JB, CE, TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 15.0	<b>Penetration Depth</b> 12cm	<b>Time</b> 1524
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i> Wet Spec 40 ml 2 ml 95% fines
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-09

**Location:** B'ham Bay

**Date/Time:** 9.9.14

**Crew:** TH, WH, JB, CE, TP

<b>Grab #</b> 1	<b>Bottom Depth</b> 14.2	<b>Penetration Depth</b> 13 cm	<b>Time</b> 1540
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	Wet Sieve 40 ml 5 ml return 88 % fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	



## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-23

**Location:** B'ham Bay

**Date/Time:** 9.10.14

**Crew:** TH, WH, JB, CE, TP, HF

<b>Grab #</b> 1	<b>Bottom Depth</b> 8.1	<b>Penetration Depth</b> 12 cm	<b>Time</b> 942
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	wet sieve 40µm 8ml retained 80% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-26

**Location:** B'ham Bay

**Date/Time:** 9.10.14

**Crew:** TH, WH, JB, CE, TP, HF

1012

Grab #	Bottom Depth	Penetration Depth	Time
1	10.7	10 cm	1000
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	shallow penetration rejected
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab # 2	10.4	empty	1006
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	no sed.
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab # 3	10.9	11	10:12
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	wet sieve 40 ml 18 ml 55% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB 20

**Location:** B'ham Bay

**Date/Time:** 9.10.14

**Crew:** TH, WH, JB, CE, TP, HF

Grab #	Bottom Depth	Penetration Depth	Time
1	10.8	1cm	1035
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	reject  30 knot winds
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
2		empty	1040
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	reject move to new station out wind
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
3	9.2	12 cm	1530
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	polychaetes, small bivalves wet sieve 40ml 2ml 95% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray Dark	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-06

**Location:** B'ham Bay

**Date/Time:** 9.10.14 / 1115

**Crew:** TK, WH, JB, CE, TP, HF

Grab #	Bottom Depth	Penetration Depth	Time
1	5.2	9cm	1054
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	reject add weights
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
2	5.0	11cm	1115
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	<del>None</del>	polychaetes wet sieve 4/0 ml 2 ml retained 95% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray <b>SARK</b>	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

Project: 2014 Bellingham Bay Regional  
Background Sediment Characterization

Station: BB02

Location: Bhan Bay

Date/Time: 9.10.14

Crew: TH, WH, JB, CE, TP, HF

Grab # <u>1</u>	Bottom Depth <u>5.6</u>	Penetration Depth <u>12 cm</u>	Time <u>1135</u>
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	<u>None</u>	<u>polychaetes</u> <u>wet sieve</u> <u>40cm</u> <u>95% w/ rot.</u> <u>95% filis</u>
Gravel	Brown	Slight	
Sand C M F	<u>Brown surface</u>	Moderate	
<u>Silt / Clay</u>	<u>Gray</u> <u>DK.</u>	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab # <u>X</u>	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	<u>None</u>	<u>pol</u> <u>X</u>
Gravel	Brown	Slight	
Sand C M F	<u>Brown surface</u>	Moderate	
<u>Silt / Clay</u>	<u>Gray</u> <u>Dark</u>	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-12

**Location:** B'ham Bay

**Date/Time:** 9/10/14 1330

**Crew:** TH, WH, JB, CE, TP, BF

<b>Grab #</b> 1	<b>Bottom Depth</b> 3.8 m	<b>Penetration Depth</b> 13 cm	<b>Time</b> 1330
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	<del>None</del>	Wet sieve 40ml 33ml  18 % fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray DK	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB07

**Location:** B'ham Bay

**Date/Time:** 9.10.14

**Crew:** TN, WH, JB, CE, TP, HF

<b>Grab #</b> 1	<b>Bottom Depth</b> 4.8 m	<b>Penetration Depth</b> 9 cm	<b>Time</b> 1346
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	low penetration rejected handelay
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b> 2	<b>Bottom Depth</b> 5.0 m	<b>Penetration Depth</b> 8 cm	<b>Time</b> 1352
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	low pen
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b> 3	<b>Bottom Depth</b> 4.8	<b>Penetration Depth</b> 11 cm	<b>Time</b> 1356
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	polychaetes on surface 40 ml 40 ml 90% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray DK	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-05

**Location:** B'ham Bay

**Date/Time:** 9.10.14

**Crew:** TH, WH, JB, CE, TP, HF

<b>Grab #</b> 1	<b>Bottom Depth</b> 9.9m	<b>Penetration Depth</b> 11cm	<b>Time</b> 1410
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	clams on surface polychaetes wet sieve 40um 2um 95% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray Dk.	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
<del>Cobble</del>	<del>Drab olive</del>	<del>None</del>	<del>clams on surface</del>
<del>Gravel</del>	<del>Brown</del>	<del>Slight</del>	
<del>Sand C M F</del>	<del>Brown surface</del>	<del>Moderate</del>	
<del>Silt / Clay</del>	<del>Gray Dk.</del>	<del>Strong</del>	
<del>Organic matter</del>	<del>Black</del>	<del>Overwhelming</del>	
<del>Woody debris</del>	<del>Other:</del>	<del>H<sub>2</sub>S</del>	
<del>Shell debris</del>		<del>Petroleum</del>	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	



## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-04

**Location:** Bellingham Bay

**Date/Time:** 9-10-14

**Crew:** TH, WH, JB, CE, TP, HF

<b>Grab #</b> 1	<b>Bottom Depth</b> 7.8	<b>Penetration Depth</b> 8cm	<b>Time</b> 1431
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	reject
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b> 2	<b>Bottom Depth</b> 8.0	<b>Penetration Depth</b> 11cm	<b>Time</b> 1438
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive surf	None	polychaete 40ml sieved 4ml retained 90% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-03

**Location:** B'ham Bay

**Date/Time:** 9.10.14

**Crew:** TH, WH, JB, CE, TP, HF

<b>Grab #</b> 1	<b>Bottom Depth</b> 7.2	<b>Penetration Depth</b> 10cm	<b>Time</b> 1912
<i>Sediment Type:</i> Cobble Gravel Sand C M F <u>Silt / Clay</u> Organic matter Woody debris Shell debris	<i>Sediment Color:</i> <u>Drab olive</u> <u>Surf.</u> Brown Brown surface <u>Gray DK.</u> Black Other:	<i>Sediment Odor:</i> <u>None</u> Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<i>Comments:</i> small bivalves on surface
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i> Cobble Gravel Sand C M F <u>Silt / Clay</u> Organic matter Woody debris Shell debris	<i>Sediment Color:</i> <del>Drab olive Surf.</del> Brown Brown surface Gray Black Other:	<i>Sediment Odor:</i> None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<i>Comments:</i>
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i> Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	<i>Sediment Color:</i> Drab olive Brown Brown surface Gray Black Other:	<i>Sediment Odor:</i> None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<i>Comments:</i>
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<i>Sediment Type:</i> Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	<i>Sediment Color:</i> Drab olive Brown Brown surface Gray Black Other:	<i>Sediment Odor:</i> None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<i>Comments:</i>

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB-01

**Location:** B'ham Bay

**Date/Time:** 9.11.14

**Crew:** TH, WH, JB, CE, TP, SE

<b>Grab #</b> 1	<b>Bottom Depth</b> 11.9	<b>Penetration Depth</b> 12 cm	<b>Time</b> 834
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive surf.	None	polychaetes wet slava 40ml S 4ml P 90% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray DK,	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** BB14

**Location:** Bellingham Bay

**Date/Time:** 9.11.14

**Crew:** TV, WH, JB, CE, TP, SE

<b>Grab #</b> 1	<b>Bottom Depth</b> 12.9 m	<b>Penetration Depth</b> 14 cm	<b>Time</b> 853
<b>Sediment Type:</b> Cobble Gravel Sand C M F Silt/Clay Organic matter Woody debris Shell debris	<b>Sediment Color:</b> Drab olive surf. Brown Brown surface Gray dk. Black Other:	<b>Sediment Odor:</b> None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<b>Comments:</b> wet sieve 40 ml 3 ml 93% fines
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b> Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	<b>Sediment Color:</b> Drab olive Brown Brown surface Gray Black Other:	<b>Sediment Odor:</b> None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<b>Comments:</b>
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b> Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	<b>Sediment Color:</b> Drab olive Brown Brown surface Gray Black Other:	<b>Sediment Odor:</b> None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<b>Comments:</b>
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b> Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	<b>Sediment Color:</b> Drab olive Brown Brown surface Gray Black Other:	<b>Sediment Odor:</b> None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	<b>Comments:</b>

## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional  
Background Sediment Characterization

**Station:** DB27

**Location:** B' Ham Bay

**Date/Time:** 9-11-14

**Crew:** TH, WH, JB, CE, TP, SE

<b>Grab #</b> 1	<b>Bottom Depth</b> 10.9	<b>Penetration Depth</b> 9cm	<b>Time</b> 915
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F Silt / <u>Clay</u> Organic matter Woody debris Shell debris	Drab olive Brown Brown surface <u>Gray</u> Black Other:	None <u>Slight</u> Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
<b>Grab #</b> 2	<b>Bottom Depth</b> 10.9	<b>Penetration Depth</b> 12	<b>Time</b> 923
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F <u>Silt / Clay</u> Organic matter Woody debris Shell debris	Drab olive Brown Brown surface <u>Gray</u> <u>DK</u> Black Other:	None <u>Slight</u> Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	Wet sige 40ml 6 <del>3</del> T.H. 85% of fines <del>93% of fines</del> T.H.
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble Gravel Sand C M F Silt / Clay Organic matter Woody debris Shell debris	Drab olive Brown Brown surface Gray Black Other:	None Slight Moderate Strong Overwhelming H <sub>2</sub> S Petroleum	

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB-25

**Location:** Bham Bay

**Date/Time:** 9.11.14

**Crew:** TH, WH, JB, CE, TP, SE

Grab #	Bottom Depth	Penetration Depth	Time
1	7.7m	16cm	944
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
2	7.7m	11cm	950
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	<del>None</del>	wet sieve
Gravel	Brown	Slight	40%
Sand C M <u>F</u>	<u>Brown surface</u>	Moderate	polychaetes
<u>Silt</u> <u>Clay</u>	Gray	Strong	8%
<u>Organic matter</u>	<u>Black</u> <u>clay</u>	Overwhelming	bivalves
Woody debris	Other:	H <sub>2</sub> S	80% fines
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB 11

**Location:** B'ham Bay

**Date/Time:** 9.11.14

**Crew:** TH, WH, JB, CE, TP, SE

Grab #	Bottom Depth	Penetration Depth	Time
1	12.9	15cm	1024
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	<p style="font-size: 1.2em; font-weight: bold;">poly tubes</p> <p>wet sieve 40um 3um 93% fines</p>
Gravel	Brown	<u>Slight</u>	
Sand C M F	Brown surface	Moderate	
<u>Silt / Clay</u>	<u>gray</u> <b>ODK</b>	Strong	
Organic matter	Black	<u>Overwhelming</u>	
Woody debris	Other:	<u>H<sub>2</sub>S</u>	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	
<i>Sediment Type:</i>	<i>Sediment Color:</i>	<i>Sediment Odor:</i>	<i>Comments:</i>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	

WH  
 9/16/14

# Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB-16

**Location:** Bellman Bay

**Date/Time:** 9.11.14

**Crew:** TH, WH, JB, CE, TP, SE

Grab #	Bottom Depth	Penetration Depth	Time
1	11 m	12	1049
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	✓ Drab olive surf.	None	bivalves worm tubes wet sieve 40 ml 2 ml 95% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray DK.	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
Grab #	Bottom Depth	Penetration Depth	Time
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	



## Benthic Grab Collection Logbook

**Project:** 2014 Bellingham Bay Regional Background Sediment Characterization

**Station:** BB-29

**Location:** Bellingham Bay

**Date/Time:** 9/11/14

**Crew:** TH, WH, JB, CE, TP, SE

<b>Grab #</b> 1	<b>Bottom Depth</b> 11m	<b>Penetration Depth</b> 13 cm	<b>Time</b> 1103
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive surface	None	poly tubes w/pt sieve 40 ml 8 ml 90% fines
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray dk.	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	
<b>Grab #</b>	<b>Bottom Depth</b>	<b>Penetration Depth</b>	<b>Time</b>
<b>Sediment Type:</b>	<b>Sediment Color:</b>	<b>Sediment Odor:</b>	<b>Comments:</b>
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	
Silt / Clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	Other:	H <sub>2</sub> S	
Shell debris		Petroleum	